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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,186	04/27/2001	Jacek Tadeusz Gabzdyl	M00B107	2157

7590 08/06/2003

The BOC Group, Inc.  
Intellectual Property Department  
100 Mountain Avenue  
New Providence, NJ 07974

EXAMINER

COOKE, COLLEEN P

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 08/06/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

AS-12

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	09/844,186		GABZDYL, JACEK TADEUSZ	
	<b>Examiner</b>		<b>Art Unit</b>	
	Colleen P Cooke		1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 June 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

***Response to Arguments***

Applicant's arguments filed 6/18/03 have been fully considered but they are not persuasive.

In response to applicant's argument that the references do not disclose "achieving reduced tensile stresses and creating compressive stresses in the welding zone", the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Furthermore, although the references do not disclose such stress condition being achieved, it is believed that as the references teach the process as claimed (applying a cryogen at or adjacent the weld zone), the resultant stress conditions would be present regardless of whether the references discloses such or not.

In response to applicant's argument that the use of liquid nitrogen by Bottiglia to prevent a protective coat from being damaged during welding as opposed to being used to adjust the stress patterns in the weld zone, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). As stated above, the resultant stress patterns would be present regardless of whether the references desire them or disclose them.

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In addition, the applicant notes that Bottiglia relates to arc welding, while Waldron relates to friction stir welding, and that the two welding process create completely different heating patterns. While this may be true, Bottiglia is not relied upon for any specific welding teachings, but rather for the broader teaching that when applying cooling fluids to a weld zone, a cryogen such as liquid nitrogen may be used. This teaching is to modify that of Waldron who teaches cooling a friction stir weld zone with a broadly described "non-reactive liquid coolant" but does not specifically mention a cryogen or liquid nitrogen although Waldron does teach chilled nitrogen gas. It is the position of the examiner that the non-reactive liquid coolant of Waldron would encompass a liquid cryogen as claimed, and that the teaching of Bottiglia that using such a liquid cryogen to cool a weld zone makes the combination obvious. The applicant has not presented any argument drawn to this point.

Regarding the application of Soviet patent SU-414066 to claim 4, the applicant simply repeats above arguments relating to the desired resultant stress patterns and the differences in different welding processes and the same response applies. The Soviet reference is relied upon simply to teach that liquid argon is an alternative to liquid nitrogen as a coolant for welding zones and thus is used to modify the teachings of Waldron and Bottiglia as such. In response to applicant's argument that the Soviet reference is nonanalogous art because it is drawn to electrical arc welding, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the

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references employed are all concerned with cooling of the weld zone and would thus appear to be reasonably pertinent to the particular problem of cooling a weld zone.

In response to applicant's argument that Terai et al. is nonanalogous art because it is concerned with toughening the weld metal while Waldron cools to reduce the size of the heat effected [sic] zone, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, the art is particularly pertinent to the applicant's problem, not the problem of the primary reference (Waldron). Thus although the applicant may characterize Waldron as cooling to reduce the size of the heat effected [sic] zone, both references are reasonably pertinent to the applicants problem of cooling a weld zone with various appropriate cooling materials.

Terai et al. is not relied upon to teach an entire welding process, but rather to teach an additional cooling material of solid carbon dioxide or a mixture of solid carbon dioxide and liquid cryogen. Terai et al. uses these materials to cool the weld zone and present alternative materials to those taught by Bottiglia and Waldron to cool a weld zone.

The applicant also argues that Terai et al. teaches "that the subzero treatment is performed after the weld has been made and is not as part of the welding method step itself as claimed." The instant claim simply requires a friction stir welding method including a step of applying a cryogen at or adjacent a heated welding zone. The applicant has not specified when in the friction stir welding process this cryogen application occurs, whether before, during, or after the weld has been made, except that it is to a heated welding zone. The teaching of Terai et al.

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where the cryogen is applied after the weld would certainly meet the limitations of the claim as the claim language "at or adjacent a heated welding zone" would appear to indicate the weld has been made. Furthermore, as indicated in Figure 6 or Terai et al., the data on the chart includes applying the coolant as the weld is made. Although Terai et al. may not identify this as the most preferred embodiment, Terai et al. had envisioned that the coolant may be applied as the weld is made or at some time after the weld has been made, which teachings meet the claim.

The above is given to address the applicant's arguments, but let it be stressed that in the rejection Terai is relied upon to teach alternative cooling materials for a weld zone, which alternative materials are used to modify the teachings of Waldron and Bottiglia.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron et al. (6168067) in view of Bottiglia (4296300).

Waldron et al. teaches a high strength friction stir welding process which includes applying a cooling fluid through one or more jets to the weld zone immediately behind the probe (Column 5, lines 38-43). Waldron et al. teaches that the workpieces which are being friction stir welded may be one of a number of aluminum alloys (Column 3, line 62 through Column 4, line 5). Waldron et al. teaches that the cooling fluid to be used "may include any non-reactive liquid

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coolant or chilled gas" (Column 5, lines 48-49) but does not specifically teach using a cryogen broadly or liquid nitrogen specifically.

Bottiglia teaches cooling a weld zone by applying the cryogen liquid nitrogen (Column 2, lines 37-65).

Waldron et al. and Bottiglia are analogous art because they are from the same field of endeavor, which is application of fluids to cool a weld zone. It would have been obvious to modify the process of Waldron et al. which requires a non-reactive cooling liquid by using liquid nitrogen as taught by Bottiglia because Bottiglia teaches that liquid nitrogen can be used in a smaller amount than other coolants which results in less disturbance to the weld zone and workpieces (Column 1, lines 28-45), so that a temperature change is achieved without disturbing the joined workpieces.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron et al. in view of Bottiglia as applied to claims 1 and 2 above, and further in view of Soviet Union patent (SU-414066).

Waldron et al. in view of Bottiglia teach the process as described with respect to claims 1 and 2 above, but do not teach that the coolant used is liquid argon.

The Soviet reference teaches using streams of liquid argon or nitrogen to cool a weld (see provided abstract).

Waldron et al., Bottiglia, and the Soviet reference are analogous art because they are from the same field of endeavor, which is application of fluids to cool a weld zone. It would have been obvious to modify the process of Waldron et al. in view of Bottiglia by using liquid



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argon instead of the liquid nitrogen of Bottiglia because the Soviet reference teaches that liquid nitrogen and liquid argon are interchangeably used to cool a weld zone.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron et al. in view of Bottiglia as applied to claim 1 above, and further in view of Terai et al. (3836748).

Waldron et al. in view of Bottiglia teach the process as described with respect to claim 1 above including using liquid nitrogen to cool the weld zone, but do not teach that the coolant used is solid carbon dioxide or solid carbon dioxide mixed with a liquid cryogen.

Terai et al. teaches a welding process including a "sub-zero treatment" consisting of contacting the weld zone with dry ice or cry ice and liquid nitrogen (Column 3, lines 5-15).

Waldron et al., Bottiglia, and Terai et al. are analogous art because they are from the same field of endeavor, which is application of coolants to a weld zone. It would have been obvious to modify Waldron et al. in view of Bottiglia by using solid carbon dioxide or solid carbon dioxide mixed with liquid nitrogen because a small amount of this low-temperature coolant may be used to cool the weld zone.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this or earlier communications from the examiner should be directed to Colleen Cooke, whose telephone number is 703-305-1136. She can normally be reached Monday-Thursday from 7:15-5:45pm.

If attempts to reach the examiner by telephone are unsuccessful, her supervisor, Thomas Dunn, can be reached at 703-308-3318. The official fax number for the organization where this application or proceeding is assigned is 703-305-6078. The unofficial fax number for this examiner is 703-746-3048.

Any inquiry of a general nature relating to the status of this application or proceeding should be directed to the receptionist, whose telephone number is 703-308-0661.

CPC 7/30/2003

  
M. ALEXANDRA ELVE  
PRIMARY EXAMINER